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Strategic Conservation Investments: Revised Methodology

California Legacy Project

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Introduction

The initial intent of the Legacy Project was to develop a “conservation blueprint” for departments within the California Resources Agency. Specifically, the project was responsible for “assessing the state’s natural resources and habitat, and developing a long-term set of priorities and targets for future investment in resource protection, habitat acquisition, and preservation”. This concept of a “blueprint” assumed that the variety of departmental missions and the constantly evolving state of conservation planning could be contained within a fixed, one-size-fits-all approach.

During the implementation of the Legacy Project, however, this assumption did not stand up under scrutiny. Legacy Project staff quickly learned that an evolving, adaptive approach was necessary to be effective in a rapidly changing decision environment. Staff also recognized that a broader scope, beyond a biological resource focus, was required to address upfront potential areas of conflict and collaboration. This broader scope is also more supportive of the diversity of goals and planning needs among departments with the Resources Agency.

This report describes important concepts that a statewide conservation investment strategy needs to incorporate. The initial methodology, described in the April 2001 *First Draft Report on the Methodology to Identify State Conservation Priorities*, has been improved based on these concepts. This report also describes specific improvements to the methodology.

The initial methodology, as described in the April 2001 report, is designed to improve the basis for identifying valuable conservation investments. Its main focus is to provide an integrated decision, or planning, support framework that allows users to efficiently:

- Establish values, goals, and objectives
- Assess current resource conditions
- Develop scenarios (that is, to evaluate anticipated possibilities for future conditions, based on current trends such as urban growth)
- Evaluate conservation options to achieve desired goals
- Allocate resources to best options
- Monitor outcomes

As part of this framework, the Legacy Project initially worked with the National Center for Ecological Analysis and Synthesis (NCEAS), at the University of California at Santa Barbara, to develop conceptual models. As in any strategic effort, the Legacy Project staff tested the usefulness of this approach with a wide array of potential users. These users included those who make conservation decisions directly, influence those decisions, or are affected by those decisions. As a result of this feedback, the Legacy Project staff gained a better

understanding about the nature of conservation investment decisions in California. Staff enhanced the methodology based on these responses.

In brief, the Legacy Project has expanded the original methodology by adding components that better address the complexities of making conservation decisions in California. These added elements include recognizing value judgments, improving existing data, incorporating professional expertise, building on existing efforts, and enhancing support from other agencies. These are all necessary to translate scientific data into informed and valuable conservation decisions. The following sections below explain each of these important concepts and enhancements in more detail.

Key Concepts

The April 2001 report had already acknowledged several important concepts that were raised during the review process. Chief among these was a recognition that conservation decisions are made in a complex web of natural and social sciences and interactions, often with imperfect data. In such an environment, the methodology needs to evolve over time to adapt to new understanding and information.

The following is a description of the key concepts learned or reinforced during the outreach process so far. To be applicable for real-world situations, the methodology needs to address these issues. Accompanying the text are a series of consecutive figures that outline, in increasing complexity, the various factors that affect conservation planning.

- **A scientific methodology alone cannot identify important investments.** Conservation decision-making is not simply a matter of using a computer to generate maps of conservation priorities (Figure 1).



Figure 1

It depends upon a mix of scientific input and value judgments (Figure 2). These value judgments can be in the form of goals, criteria, and differential weighting of those criteria. Depending on which values are selected, different users can analyze the same scientific data in different ways to produce a range of different options. For example, a vegetation/land cover data set can be used to identify either potential habitat for rare species, lands at risk of catastrophic wildfire, or risks of soil erosion, depending on which goals are being considered.

The resulting options are then subject to other types of value judgments, or decision factors, that affect the decision process. These other factors can include, for example expected risks of land conversion, existing or new opportunities with funding, and potential tradeoffs between apparently conflicting choices.

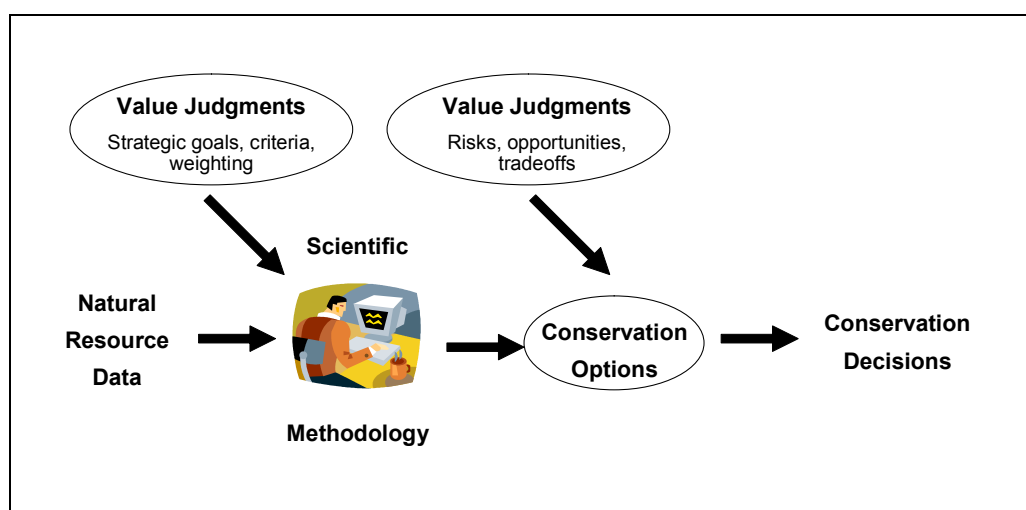


Figure 2

- **There is no one set of conservation priorities for the state.** The multitude of existing value judgments results in a wide variety of potential conservation priorities, not just one set of priorities. These value judgments may vary considerably from region to region within the state, depending on unique regional situations. For example, the risk of urban growth and goals to save any remaining natural habitat are more applicable in heavily urbanized areas. This is less relevant in remote rural areas that are not expected to grow substantially in the short or long term.

Value judgments vary from state department to department (even among programs within those departments), depending on funding and mission constraints. For example, all state agencies have responsibilities to adhere to the California Endangered Species Act. However, they also need to address their own unique roles as well. The Department of Fish

and Game has unique trustee responsibility for all plants and animals, not just endangered species. This includes programs to provide hunting and fishing opportunities on its own lands as well as other public lands. The Department of Forestry and Fire Protection has a unique role to manage the risk of wildfire. Wildfire can be detrimental to human life and property but it also may be required for maintaining natural habitat. This can result in conflicting goals for the same location.

Distinct from those above roles, the Department of Conservation has a unique state government role related to preservation of agricultural lands through Williamson Act tax relief and agricultural preservation easements. It has very little role related to wildlife or wildlife habitat.

These values also vary considerably depending on different goals and funding allocation perspectives. For example, investments in forested lands could aim to restore natural fire cycles, maximize carbon storage, maintain sustainable timber harvest, or reduce risk to human life and property. But, depending on which perspective is used, priorities might be to 1) maintain patchworks of different forest age-classes, 2) promote late successional forests, 3) maintain timber stands at age-classes with the highest productivity rates, or 4) reduce vegetation (fuel) near populated areas.

Given such a complex set of value judgments and goals, decision makers need to generate their own set(s) of priorities, depending on their agency or organization's (or even specific program's) mission, goals, existing funding, and funding constraints. The Legacy Project is well placed to assist these different groups identify their priorities and then to share those priorities among other organizations. This will enable different organizations to learn about opportunities to achieve multiple objectives within the same area, with potentially reduced overall costs.

- **Scientific approaches to identifying conservation options need to be flexible and easy to comprehend.** The expert-driven models initially developed by NCEAS became too complex for non-experts to understand. These models also became too time-consuming for non-experts to use with their own valuable ideas and information. They were too inflexible for different geographic scales, different sets of natural resources, and unique relationships between resources condition and threats. As mentioned above, the methodology must be able to accommodate a variety of value judgments.
- **Better science leads to more informed decisions.** Current data and expertise can be, and are being, used to make conservation decisions. However, these decisions can be more informed with better databases, research, inventory, and monitoring.

Most of the statewide databases currently available were not developed specifically to support conservation investment decisions. There are gaps or inadequacies in these databases that are important to decision making. These problems include missing geographic coverage and insufficiently fine resolution. For example, in terms of geographic coverage, detailed soils survey data are still not available for all counties. In terms of resolution, statewide vegetation data are still too coarse to identify rare or limited habitats sufficiently, such as riparian areas.

Another inadequacy is that some statewide databases have insufficient information content for conservation-decision support. For example, statewide hydrology data provide information about the location of rivers and streams, but it contains no data on riffles, pools, overstream canopy, and other factors that are important for identifying important fish habitat. Statewide vegetation data provide the location and extent of major vegetation types, but provides little information on the levels of disturbance (such as rural residential housing, roads, exotic species, etc.) within those vegetated areas.

Other statewide databases have gaps because they have to rely on field surveys, which are incomplete for many areas. For example, the most comprehensive inventory of sensitive or special-status species in the state, the California Natural Diversity Data Base, is still not 100% complete. This is due to the lack of biological surveys in many locations. Field workers are constantly conducting new surveys and providing CNDDDB with new locational records of sensitive species.

Another type of gap is the complete absence of statewide databases for some important conservation information. For example, the distribution of many fish species is known mostly from localized fisheries databases, which are scattered in multiple field offices, and in different data formats and standards.

- **Professional expertise is a critical source of natural resource and planning information and it is a vital complement to existing databases.** This expertise comes in the form of scientific, planning, and policy expertise (Figure 3). Such expertise can play a valuable role in developing a scientifically robust set of options, as well as in evaluating those options for making decisions.

Scientific experts have considerable knowledge about natural resources, but this knowledge is not necessarily in existing databases. In fact, some of this knowledge may be very difficult to capture in database formats. This includes, for example, information about locations of important

natural resources, ecological relationships between species, and ecosystem sensitivity to disturbances.

Other important factors that influence the success of conservation investments are outside the realm of science. Planning experts can provide valuable insight into such factors as local government support, public interest, anticipated conservation opportunities, etc.

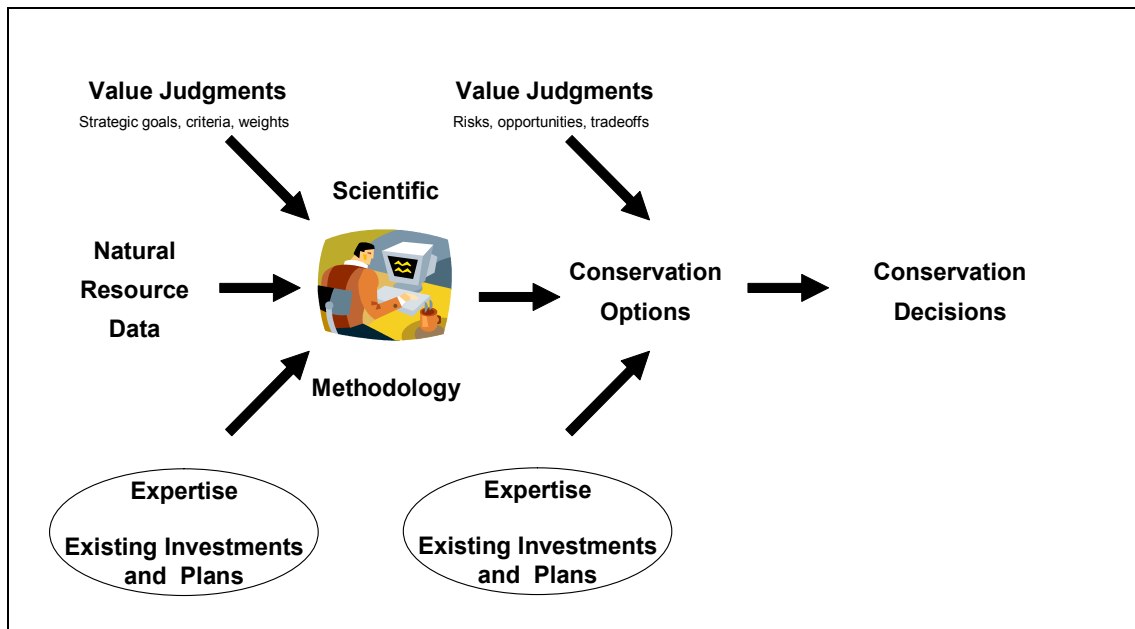


Figure 3

Department staff within the Resources Agency has considerable knowledge about natural resources and experience in conservation planning, identifying valuable investments, and improving the conservation status of natural resources. The Legacy Project staff depends on these departments for data, expertise, policy support, and implementation. Their active involvement, feedback, and support are critical for the success of the Legacy Project. Thus, the methodology must incorporate existing investments and approaches. It has to address departmental needs so that the products are useful for their staff to identify their own sets of conservation options.

- **Conservation planning in California is not a blank slate.** State agencies have been developing and implementing multiagency, multipurpose conservation plans for many years. These include, for example, Natural Community Conservation Plans, Coordinated Resource Management Plans, and watershed plans. Agencies have invested

considerable time and money on high priority projects throughout the state and in developing excellent working relationships with other public agencies and non-governmental partners. The Legacy Project needs to recognize and build on this significant progress. It needs to ensure that a new process and new sets of priorities avoid derailing important efforts that have been building for many years. Therefore, an important component of the methodology is to acknowledge these existing and emerging plans and to incorporate them into conservation options (Figure 3).

- **Statewide planning is strategic, not operational.** Strategic conservation planning provides a long-term vision for larger geographic areas. This type of planning contrasts with operational, or project-level planning, which focuses more on short-term implementation in smaller areas or specific investment sites.

Any set of strategic priorities progresses through an operational planning stage before making a difference on the ground. This operational stage relies on its own unique set of value judgments, data that is more localized and of higher resolution, and expertise (particularly transactional and land management). It also has its own set of localized plans to consider and potentially integrate (Figure 4). For example, in protecting a specific site, planners need to consider data on toxics, upstream dynamics, exotic species, willing sellers or cooperative neighbors, public interest, and detailed public access concerns.

The Legacy Project is designed primarily to provide a strategic context for decision-making. However, the data and tools developed by the Legacy Project can also be useful at the operational level. The project's efforts to increase access to existing data, as well as to stimulate the improvement of data quality, are especially valuable in data-poor areas of the state. The integration of data from many sources gives project-level planners a landscape-level context about natural resources, threats, costs, and benefits of alternative actions. Actual project-level conservation options and decisions, however, depend on a variety of other information that the Legacy Project is not funded to provide.

- **Conservation decision-making is an ongoing process and is conducted by many organizations, in addition to Resources Agency departments.** Other state agencies, federal agencies, local governments, and private conservation organizations are making decisions every day that affect natural and recreational resources. These actions may have direct or indirect effects on any decisions that Resource Agency departments may choose to make in the future. Conflicts and unnecessary duplication of effort can be minimized by ensuring that these other agencies and organizations have access to the same sets of statewide

natural resource, working landscape and recreational lands and facilities data, thereby giving them a statewide context for their decisions.

Individuals outside of the conservation-planning world may more easily understand these important points by drawing comparisons to financial investment portfolios. Similar to financial investors, conservation investors are building a conservation portfolio by providing long-term protection for valuable natural, working, and recreational resources (capital). California's existing natural resource portfolio is evident in the form of lands already acquired, and frequently managed, for long-term protection. An important investment goal is to improve that portfolio and its long-term success.

As any broker will attest, the best way to improve the portfolio of natural capital depends on one's investment goals (value judgments). Once goals and criteria are stated, the typical investor can draw on existing data to identify new investment options. Naturally, the more data one has, the more informed the investment decision. However, a wise investor will recognize that data alone are usually inadequate. Additional expertise can lead to better decisions (that explains why some financial investors rely on experts in financial planning). Investors need to consider existing or emerging investments (in this case, existing conservation plans) to avoid negative effects on plans in process.

Given a wide range of potential investment options, those choices can be narrowed with the use of planning-support tools, which can iteratively eliminate possibilities as needed, based on user input. Such tools are most useful when they, and the methodology behind them, are flexible to accommodate a variety of goals and simple to understand, yet sufficiently robust to generate valuable results. Such planning tools can also allow users to evaluate new opportunities for investment (such as a new proposal for conserving a specific natural area) relative to other possibilities.

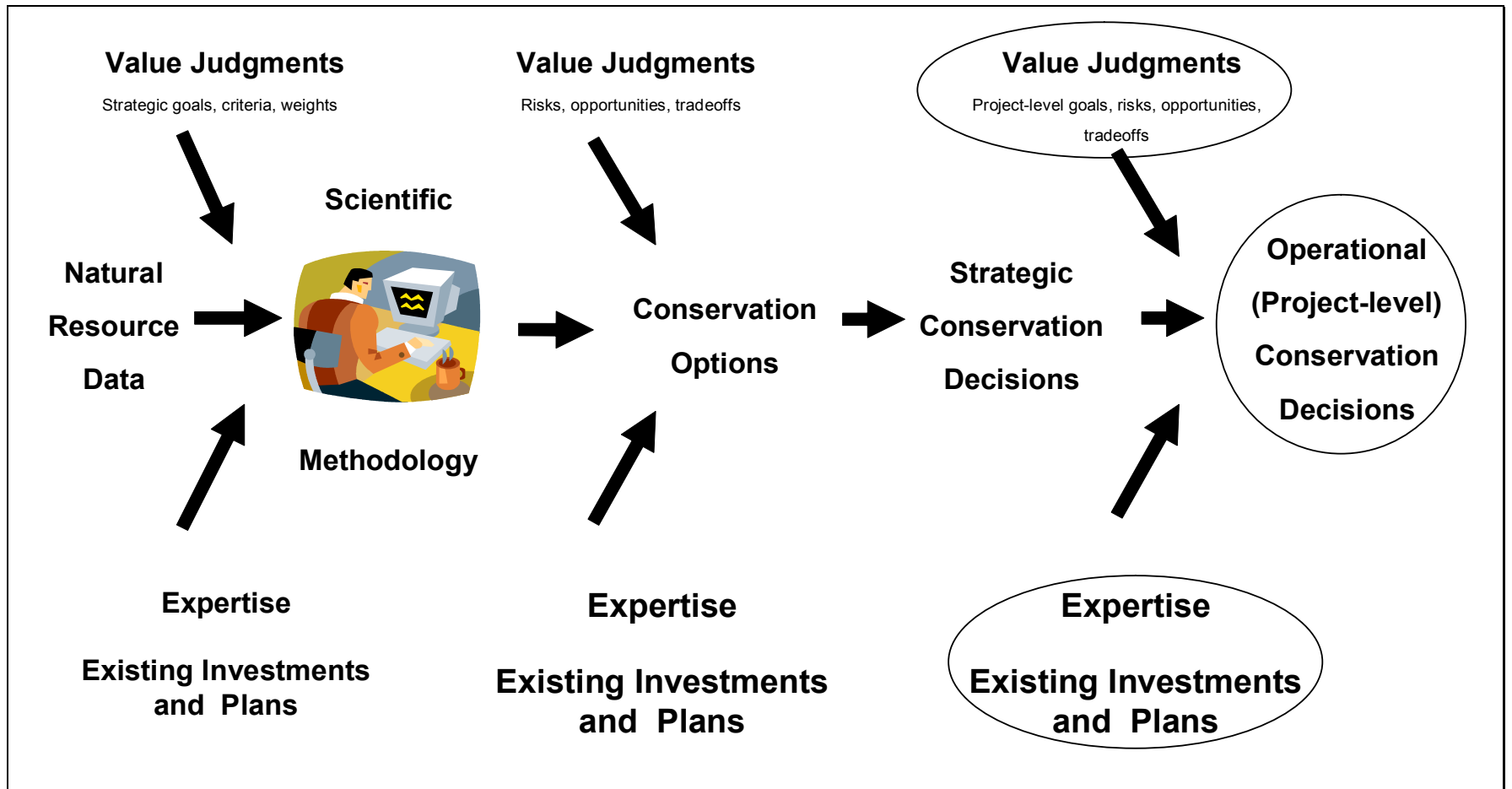


Figure 4

Improvements to Methodology

The general approach of the methodology outlined in the 2001 report is still valid. The Legacy Project still intends to recognize differing values, goals, and objectives; to improve knowledge about current resource conditions and future scenarios or trends; and to improve the decision-making process by making such knowledge easier to use for identifying and evaluating strategic options. The major change is how these steps are conducted. It is clear that the conservation decision process in California is more complex than can be achieved with a simple assessment-acquisition model alone. The Legacy Project can be most effective by adapting its role and approaches to take better advantage of the ongoing conservation efforts in California.

Improved Role

Based on feedback, the Legacy Project has modified its role away from developing simply one set of conservation priorities. The new role is one that is more supportive of state departments that require multiple sets of priorities, each for different purposes. The Legacy Project will provide critical statewide information that frames the state and regional context for conservation investments. Legacy staff will identify and integrate existing key data sets, act as a catalyst to fill important data gaps, and make integrated data more accessible to the responsible decision makers. Staff will provide information on the effectiveness of investments in maintaining or improving the health and condition of resources. Staff will work with each department to improve data. It will develop customized tools that use better science and information, as well as more explicit values and criteria, to meet their particular conservation mandates.

The responsibility for identifying conservation priorities will continue to be within the realm of individual departments, boards, conservancies, and commissions, which have legal responsibility for investments. The Legacy Project will work to ensure that departments are aware of important statewide conservation needs, as well as the regional and statewide implications of their combined priorities.

Expanded Methodology

In addition to this improved role, the Legacy Project has also expanded its methodology to incorporate the concepts described above and to provide for input other than existing databases. The Legacy Project has initiated a series of regional workshops with state agency staff and other stakeholders, including landowners, local officials, resource managers, and watershed groups. These workshops seek to understand the variety of existing values and goals, to gather information about existing efforts that may need additional support, and to discover other data sets important for helping making decisions.

In each region, workshop participants provide new insights about unique criteria that are important for conservation investments in their region. The workshop process helps highlight regional agreement and controversy about criteria. Some of these criteria are also common to other regions and collectively they can lead to a better sense of conservation criteria with multi-regional or statewide applicability.

The criteria identified in these workshops are valuable in identifying important data sets that may need to be created, improved, or made more accessible to users. For example, workshop participants have commonly expressed the value of important fisheries. However, high-quality data on fisheries are currently only available for some species and in a limited number of geographic areas. In response, the Legacy Project is investing in improving the status of statewide fisheries data.

Recognizing the importance of improving existing data, the Legacy Project is putting considerable effort into sparking or enhancing cooperative data efforts. Legacy staff works closely with Resources Agency departments, as well as other public agencies and private organizations, to identify important data needs and gaps. It is initiating collaboratively funded projects that integrate regional data sets, improve the quality of existing data sets, and develop new data sets. As part of efforts to make efficient use of state funds, the Legacy Project is striving to build on existing data sets. Legacy is funding an inventory of existing conservation-related data sets at the regional and local level. Information about this data (metadata) will be incorporated into the online CERES Environmental Information Catalog. This link to CERES will enable a broad audience of planners to discover and obtain this information. Where feasible, these data sets will be used to develop or improve statewide data sets.

The Legacy Project has established an interagency natural resource monitoring team to coordinate and improve assessment and monitoring statewide. This effort recognizes the need to track the health and condition of natural resources across the landscape, not just within a small set of high-value areas. The team has helped to develop a statewide monitoring methodology during the past year, which will be implemented during the coming year.

Legacy staff has developed and is constantly improving a database of existing and emerging plans to understand current investments and important priorities. Workshop participants help to identify many new plans that are initially missed at the state level by contacting individuals outside of workshops. These plans also will be valuable for testing and improving the usefulness of planning tools for application in areas without plans. The Legacy Project will also encourage the enhancement of existing plans, where feasible and appropriate, to accommodate other Legacy objectives. The methodology has been revised to reflect these plans and to consider them.

Recognizing that many other individual agencies and organizations are making conservation decisions every day, the Legacy Project is increasing access to planning data through its California Digital Conservation Atlas. This Atlas is an online, Web-based mapping tool that allows users with little or no GIS expertise to view a wide range of natural resource and conservation planning data in a user-friendly system. Increasing access to such data will provide decision makers with better data, in a more useable format, than they may already have. This Atlas will also provide a broader regional or statewide context beyond the area most directly affected by any specific conservation decision.

The Legacy Project is working with NCEAS to improve the statewide analytical approach with a more flexible, easier to understand, and more realistic method that addresses many of the concerns from stakeholders. NCEAS staff has already drafted improved models for terrestrial biodiversity. They also are currently developing improved models for aquatic biodiversity, croplands, and cost allocation. These models should allow users to identify customized sets of priorities and to evaluate strategic investment proposals.

Priority investments are not limited to acquisition alone. With approximately half the state in private ownership, it is not financially or politically prudent to consider acquiring all of the valuable natural resources on those lands. Private landowners are capable of providing long-term stewardship of those resources, but they may need financial, technical, or other forms of assistance to provide that stewardship. In response, many public agencies have developed private land stewardship programs to address that need. The Legacy Project recognizes this need as well. Legacy staff is now tasked with promoting and enhancing those programs as feasible, as well as working with them to pursue opportunities that improve private land stewardship. An ongoing example of this approach is the leadership taken by staff to attract more federal USDA Farm Bill funding towards California projects.

Support for the Legacy Project by departments within the Resources Agency is critical to the project's success. Such support comes from providing departments with assistance and information that is relevant and useful to their ongoing business needs. Legacy staff has already worked with these agencies to understand and respond to some of their needs. However, the experience of the past year has shown that Legacy staff needs to expand such a needs assessment. As a result, the project will be initiating a more in-depth "in-reach" effort this coming year. This effort will both promote use of Legacy products and seek to understand other needs for improving these products.

Improvements to the methodology are already helping to build a more pragmatic approach to conservation decisions and are enabling the project to leverage support from other state departments. As outreach continues, the project may find new ways to fine-tune this methodology to meet other needs of state departments and partners.

Summary

The initial intent of the Legacy Project was to provide a relatively simple process to guide conservation investment decisions in the state. By consulting with conservation planners and investors, Legacy staff learned that the situation and process of identifying strategic conservation investments throughout California is more complex than originally appreciated. This complexity is due, in part, to the variety of agencies and organizations, and their associated programs (even within the Resources Agency), that are actively engaged in conservation. It is also due to the multitude of existing and emerging conservation investments and plans. It is also due to the valuable role that expertise plays in decisions, which is often not captured in databases.

While the project's approach has remained the same, this valuable outreach has enabled the Legacy Project to enhance its methodology significantly. The project is learning that different regions have different criteria for identifying conservation investments, as well as having some criteria in common. It has stimulated and enhanced cooperative data development and monitoring efforts, which improve the basis for making informed decisions. The project has identified many existing and emerging plans, many of which are already addressing important statewide conservation needs. Conservation planners and decision makers will soon have ready access to this information through the Legacy Project's California Digital Conservation Atlas.

These improvements enable the Project to address a variety of investment goals, to spark greater cost sharing and coordination, and to integrate data, expertise, and existing plans. They already are helping to create a richer, more informative environment for identifying and evaluating important conservation investments.